

What is claimed is:

1 1. A stereoscopic microscope that enables a plurality of observers, including a first observer and
2 a second observer to simultaneously observe substantially the same microscope image of an
3 object, the stereoscopic microscope comprising:

4 a first observation device for use by the first observer;

5 a second observation device for use by the second observer;

6 a stereoscopic microscope body that includes an objective optical system and a pair of
7 zoom optical systems;

8 a first connector that is positioned on the stereoscopic microscope body in the vicinity
9 that the optical axis of the objective optical system intersects with the stereoscopic microscope
10 body, said first connector for attaching the first observation device; and

11 a second connector that is installed on the stereoscopic microscope body at a position that
12 is the same level as, or above, the position that the first connector is installed on the stereoscopic
13 microscopic body;

14 wherein

15 the first connector is located at a position on the stereoscopic microscope body, in relation
16 to the optical axis of the objective optical system, that is closer to the objective optical system
17 than is the position of the second connector.

1 2. The stereoscopic microscope according to claim 1, wherein the second observation device is
2 attached to the stereoscopic microscope body at the second connector and has a rotation axis
3 around which the second observation device can be rotated, and

4 the angle between said rotation axis and the optical axis of the objective optical system, in
5 the region from the observed object to the microscope body, is 15 degrees or less.

1 3. The stereoscopic microscope according to claim 2, wherein:

2 the stereoscopic microscope body further comprising a first leading optical system for

3 dividing the two light fluxes that transmit through the pair of zoom optical systems into four light
4 fluxes, said first leading optical system leading these four light fluxes toward the second
5 connector;

6 the second observation device has an ocular optical system that includes two eyepiece
7 lenses;

8 of said four light fluxes, two light fluxes are led by the ocular optical system to said
9 eyepiece lenses; and

10 by rotating the second observation device around the rotation axis, the two light fluxes
11 that enter the ocular optical system may be switched to the other two of said four light fluxes.

1 4. The stereoscopic microscope according to claim 3, wherein a pupil splitter unit for splitting a
2 light flux into two light fluxes is provided near a location conjugate with the exit pupil of one of
3 the pair of zoom optical systems.

1 5. The stereoscopic microscope according to claim 1, wherein:

2 the first connector has a contact surface that contacts the first observation device for
3 attaching the first observation device to the microscope body, said contact surface having its
4 surface normal inclined toward the first observer; and

5 the second connector is positioned on the microscope body surface in a horizontal
6 position from the first connector in a direction away from the first observer.

1 6. The stereoscopic microscope according to claim 2, wherein:

2 the stereoscopic microscope body further comprises a second leading optical system that
3 includes a plurality of reflecting surfaces and which makes four light fluxes from the light flux
4 that transmits through the objective optical system, the second leading optical system leading
5 these four light fluxes toward the second connector;

6 the second observation device has an ocular optical system that includes two eyepiece
7 lenses;

8 of the four light fluxes, two light fluxes are led by the ocular optical system to the
9 eyepiece lenses; and
10 by rotating the second observation device around the rotation axis, the two light fluxes
11 that enter the ocular optical system may be switched to the other two of the four light fluxes;
12 wherein
13 each of the four light fluxes is reflected an even number of times by the plurality of
14 reflecting surfaces.

1 7. The stereoscopic microscope according to claim 2, wherein:

2 the stereoscopic microscope body further includes a first leading optical system for
3 dividing the two light fluxes that transmit through the pair of zoom optical systems into four light
4 fluxes, the first leading optical system leading these four light fluxes toward the second
5 connector;

6 the second observation device includes a rotatable part having a rotation axis, the angle
7 between the rotation axis and the optical axis of the objective optical system in a region between
8 the observed object and the microscope body is in a range of 35 degrees up to and including 55
9 degrees;

10 the second observation device further comprises an ocular optical system that includes
11 two eyepiece lenses and a third leading optical system which leads the four light fluxes just
12 before the rotatable part; and

13 the second observation device is so constructed that two of the four light fluxes enter
14 within the rotatable part and the light fluxes that enter within the rotatable part are selected by
15 rotation of the rotatable part around the rotation axis.

1 8. A stereoscopic microscope according to claim 7, wherein :

2 the third leading optical system includes a plurality of reflecting surfaces, and each of the
3 four light fluxes is reflected an even number of times by the plurality of reflecting surfaces.

1 9. The stereoscopic microscope according to claim 3, wherein:

2 the ocular optical system includes a pair of relay optical systems, a single image rotator, a
3 pair of image formation optical systems, and a pair of eyepiece optical systems which include
4 said eyepiece lenses;

5 the second observation device includes an intermediate tube which houses the pair of
6 relay optical systems and the single image rotator, and an ocular tube that houses the pair of
7 image formation optical systems and the pair of eyepiece optical systems;

8 the intermediate tube is connected to the second connector at one end and is rotatably
9 connected to the ocular tube at the other end;

10 two light fluxes that pass through the pair of relay optical systems housed by the
11 intermediate tube transmit through the image rotator; and

12 the image rotator is made to rotate by one-half the amount of rotation of the ocular tube.

1 10. The stereoscopic microscope according to claim 3, wherein

2 the ocular optical system includes a pair of relay optical systems, a single image rotator, a
3 pair of image formation optical systems, and a pair of eyepiece optical systems including said
4 eyepiece lenses;

5 the second observation device includes an intermediate tube which houses the pair of
6 relay optical systems having exit optical axes that are substantially parallel and the single image
7 rotator, and an ocular tube which houses the pair of image formation optical systems and the pair
8 of eyepiece optical systems, with the intermediate tube being connected to the second connector
9 at one end ;

10 the ocular tube is extendable from, and collapsible into, the intermediate tube over a
11 range of movement in a direction of the exit optical axes of the pair of relay optical systems; and

12 exit pupils of the pair of relay optical systems are arranged near a middle position of the
13 range of extending and collapsing movement of the ocular tube.

1 11. An observation device that is used by attaching it to the body of a stereoscopic microscope,

the observation device comprising:

an intermediate tube that houses a pair of relay optical systems, each relay optical system having an exit axis that is substantially parallel to the exit axis of the other relay optical system, and an image rotator; and

an ocular tube that houses a pair of image formation optical systems and a pair of eyepiece optical systems;

wherein

the intermediate optical tube has a connecting portion that may be connected to the microscope body at one end and is rotatably connected to the ocular tube at the other end;

two light fluxes that pass through the pair of relay optical systems housed in the intermediate tube transmit through the image rotator; and

the image rotator is made to rotate by one-half the amount of rotation of the ocular tube.

12. An observation device that is used by attaching it to the body of a stereoscopic microscope, said observation device comprising:

an intermediate tube that houses a pair of relay optical systems, each relay optical system having an exit axis that is substantially parallel to the exit axis of the other relay optical system, and an image rotator; and

an ocular tube that houses a pair of image formation optical systems and a pair of eyepiece optical systems;

wherein

the intermediate optical tube has a connecting portion that may be connected to the microscope body at one end;

the ocular tube is extendable from, and collapsible into, the intermediate tube over a range of movement in the direction of the exit optical axes of the pair of relay optical systems; and

exit pupils of the pair of relay optical systems are arranged near a middle position of said range of movement of the ocular tube.